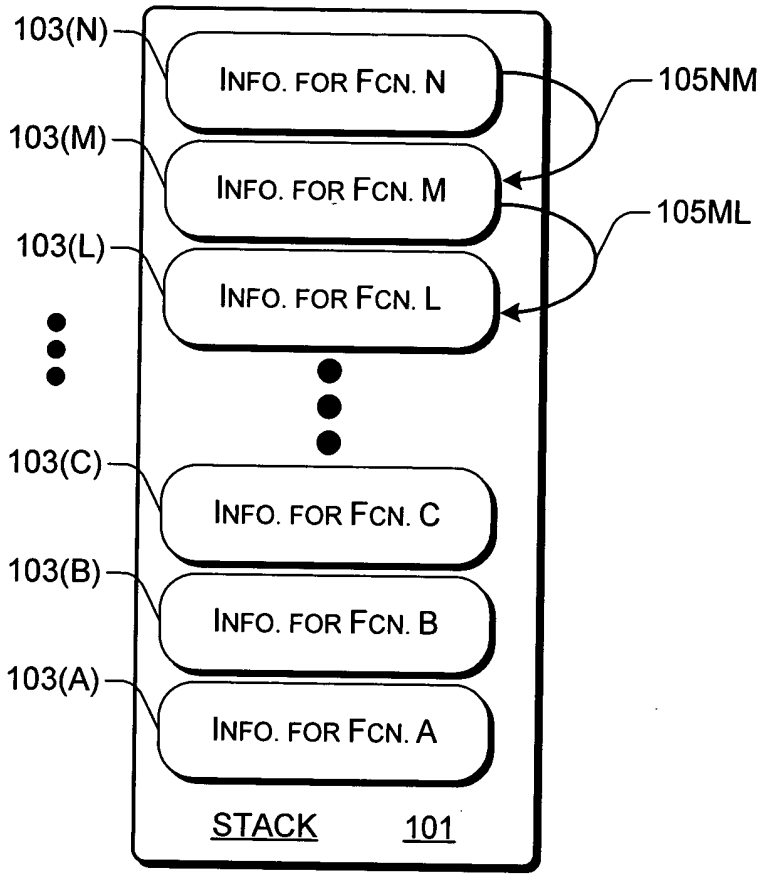

FIG. 1 Prior Art

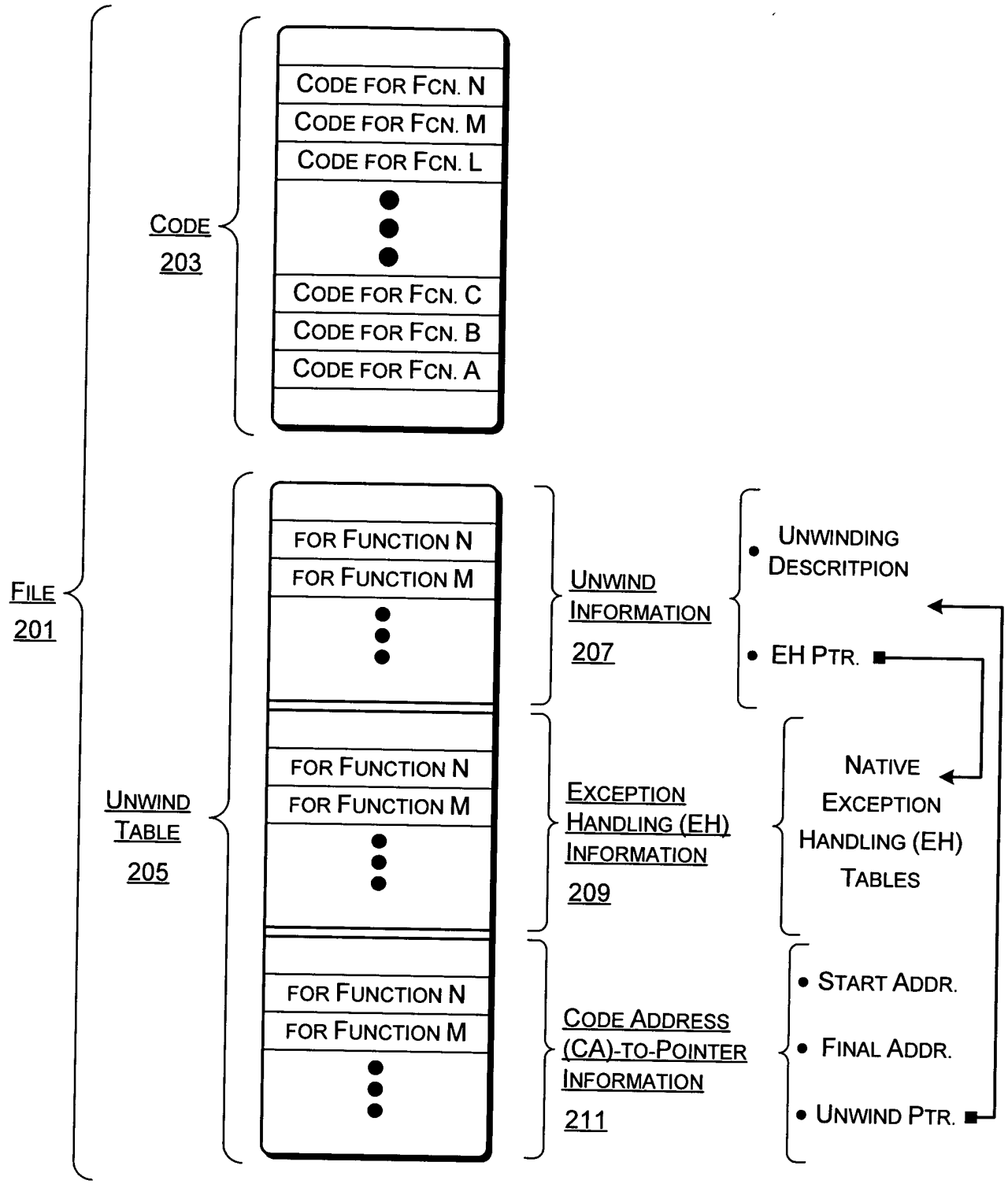

FIG. 2 Prior Art

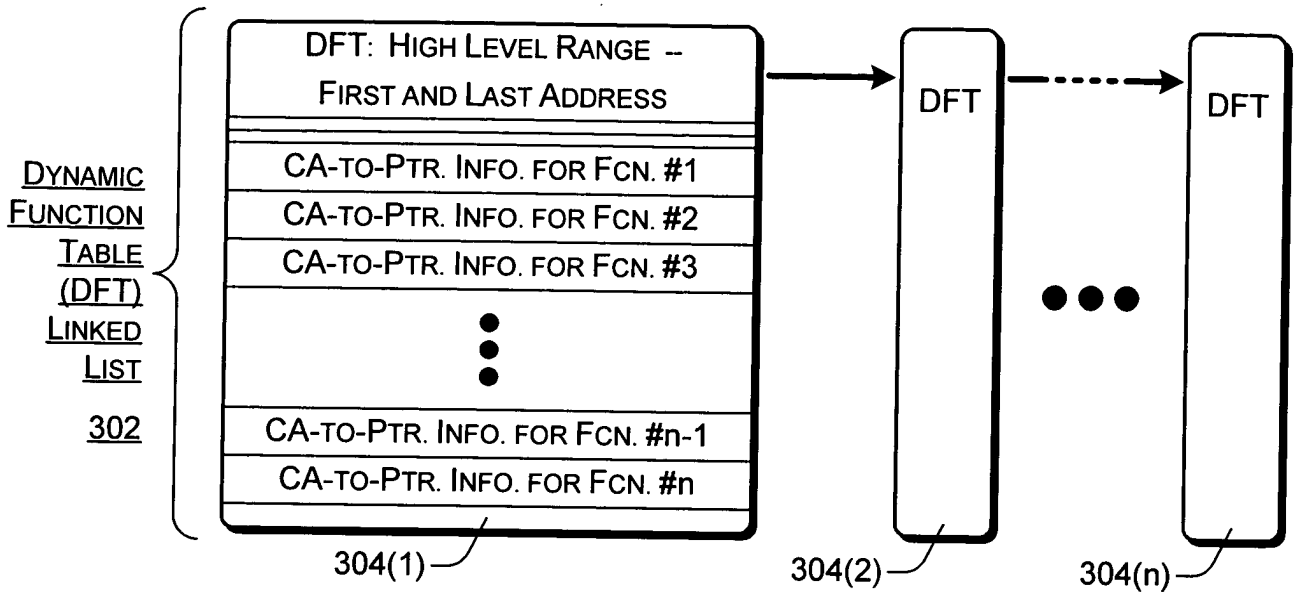
DFT: HIGH LEVEL RANGE -- FIRST AND LAST ADDRESS
CA-TO-PTR. INFO. FOR FCN. #1
CA-TO-PTR. INFO. FOR FCN. #2
CA-TO-PTR. INFO. FOR FCN. #3
CA-TO-PTR. INFO. FOR FCN. #n-1
CA-TO-PTR. INFO. FOR FCN. #n
DFT
DFT
DYNAMIC FUNCTION TABLE (DFT) LINKED LIST
302
304(1)
304(2)
304(n)

FIG. 3

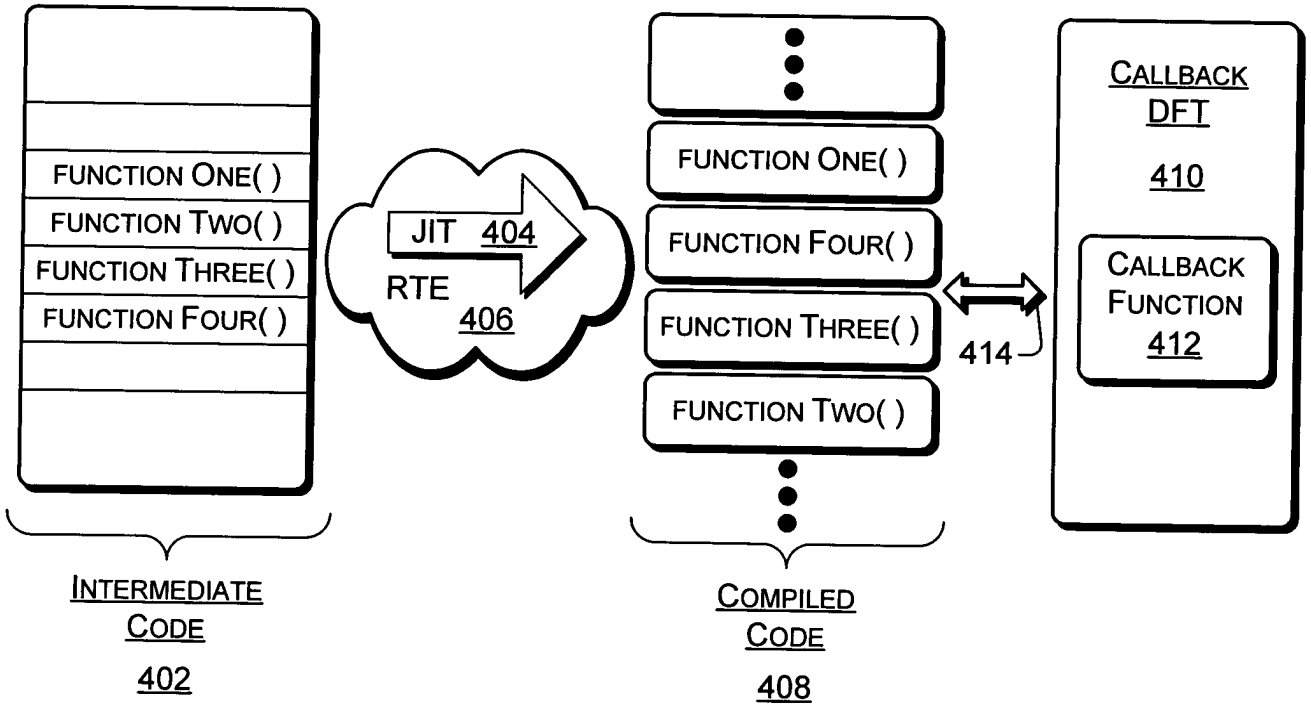
FUNCTION ONE( )
FUNCTION TWO( )
FUNCTION THREE( )
FUNCTION FOUR( )
JIT 404
RTE 406
FUNCTION ONE( )
FUNCTION FOUR( )
FUNCTION THREE( )
FUNCTION TWO( )
414
CALLBACK DFT
410
CALLBACK FUNCTION
412
INTERMEDIATE CODE
402
COMPILED CODE
408
400

FIG. 4

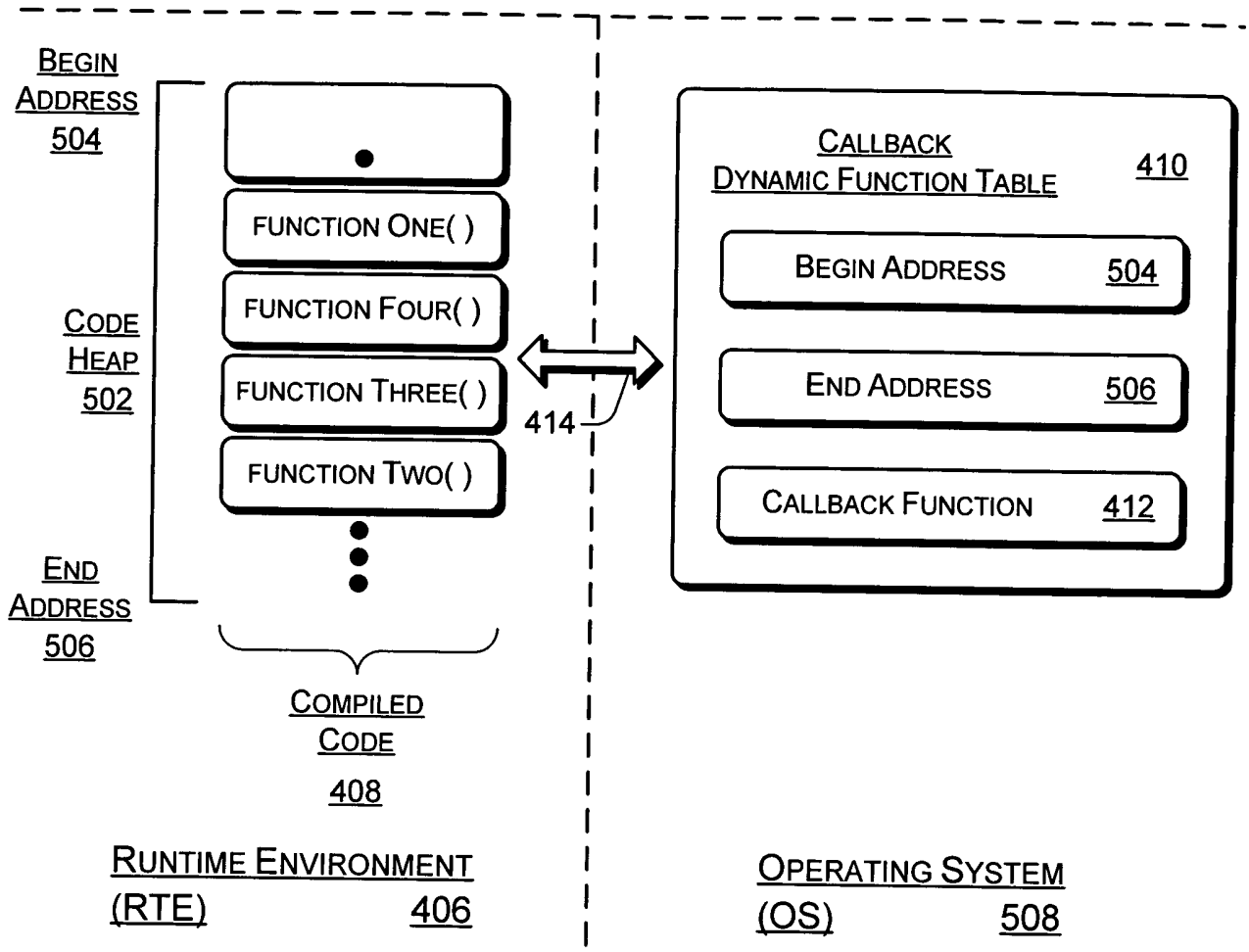
BEGIN ADDRESS 504
CODE HEAP 502
END ADDRESS 506
FUNCTION ONE( )
FUNCTION FOUR( )
FUNCTION THREE( )
FUNCTION TWO( )
414
CALLBACK DYNAMIC FUNCTION TABLE 410
BEGIN ADDRESS 504
END ADDRESS 506
CALLBACK FUNCTION 412
COMPILED CODE 408
RUNTIME ENVIRONMENT (RTE) 406
OPERATING SYSTEM (OS) 508

FIG. 5

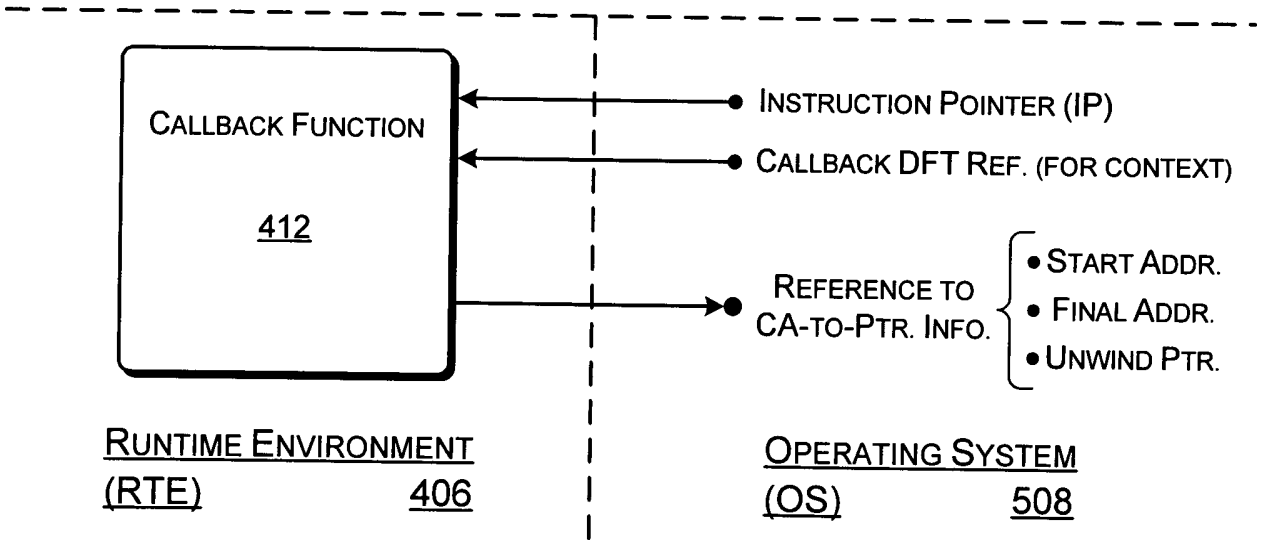
CALLBACK FUNCTION 412
INSTRUCTION POINTER (IP)
CALLBACK DFT REF. (FOR CONTEXT)
REFERENCE TO CA-TO-PTR. INFO.
• START ADDR.
• FINAL ADDR.
• UNWIND PTR.
RUNTIME ENVIRONMENT (RTE) 406
OPERATING SYSTEM (OS) 508

FIG. 6

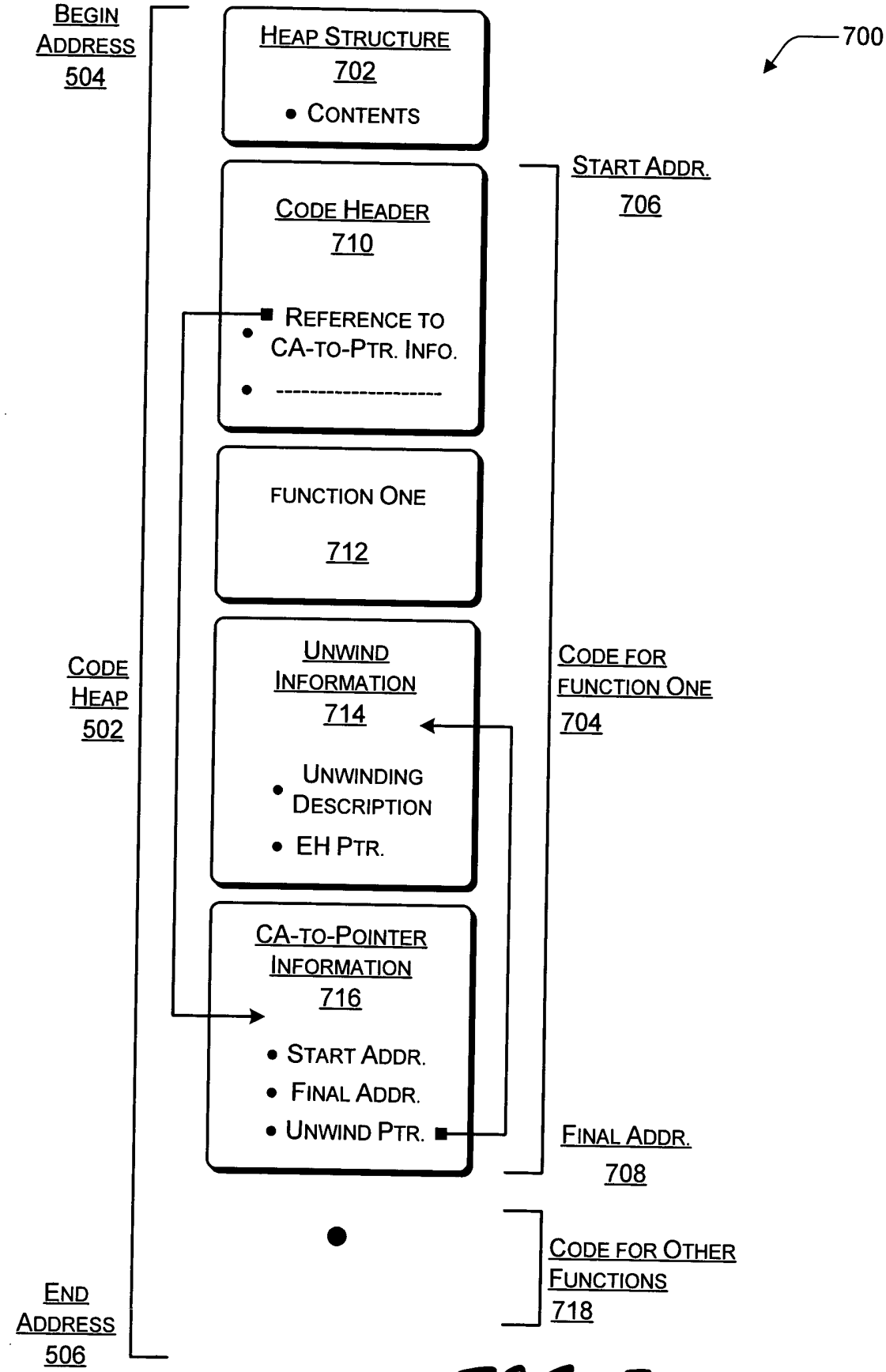
700
BEGIN ADDRESS 504
HEAP STRUCTURE 702
• CONTENTS
START ADDR. 706
CODE HEADER 710
• REFERENCE TO CA-TO-PTR. INFO.
• ----------
FUNCTION ONE 712
UNWIND INFORMATION 714
• UNWINDING DESCRIPTION
• EH PTR.
CODE FOR FUNCTION ONE 704
CODE HEAP 502
CA-TO-POINTER INFORMATION 716
• START ADDR.
• FINAL ADDR.
• UNWIND PTR.
FINAL ADDR. 708
CODE FOR OTHER FUNCTIONS 718
END ADDRESS 506

FIG. 7

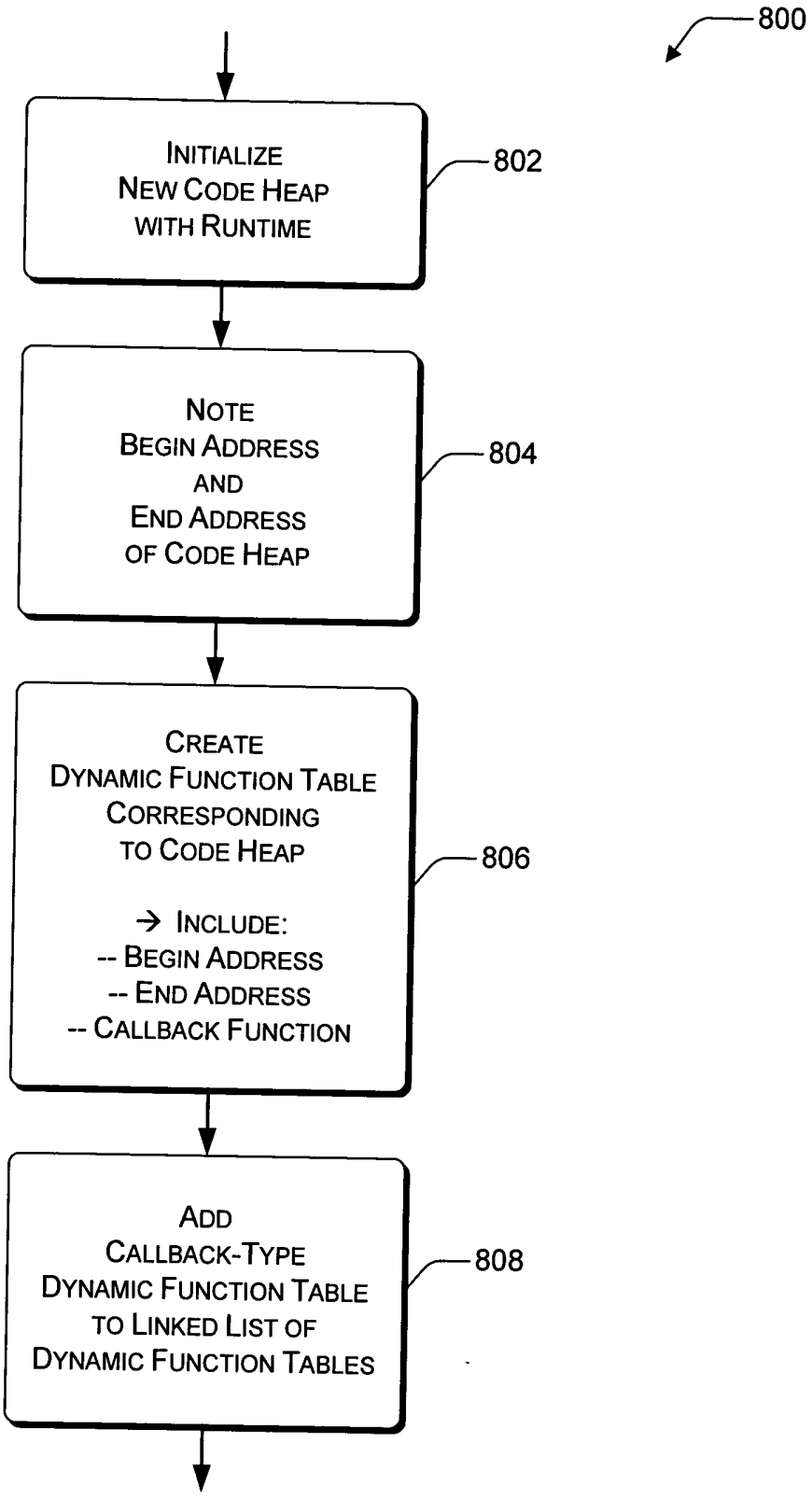
800
INITIALIZE NEW CODE HEAP WITH RUNTIME
802
NOTE BEGIN ADDRESS AND END ADDRESS OF CODE HEAP
804
CREATE DYNAMIC FUNCTION TABLE CORRESPONDING TO CODE HEAP
→ INCLUDE:
-- BEGIN ADDRESS
-- END ADDRESS
-- CALLBACK FUNCTION
806
ADD CALLBACK-TYPE DYNAMIC FUNCTION TABLE TO LINKED LIST OF DYNAMIC FUNCTION TABLES
808

FIG. 8

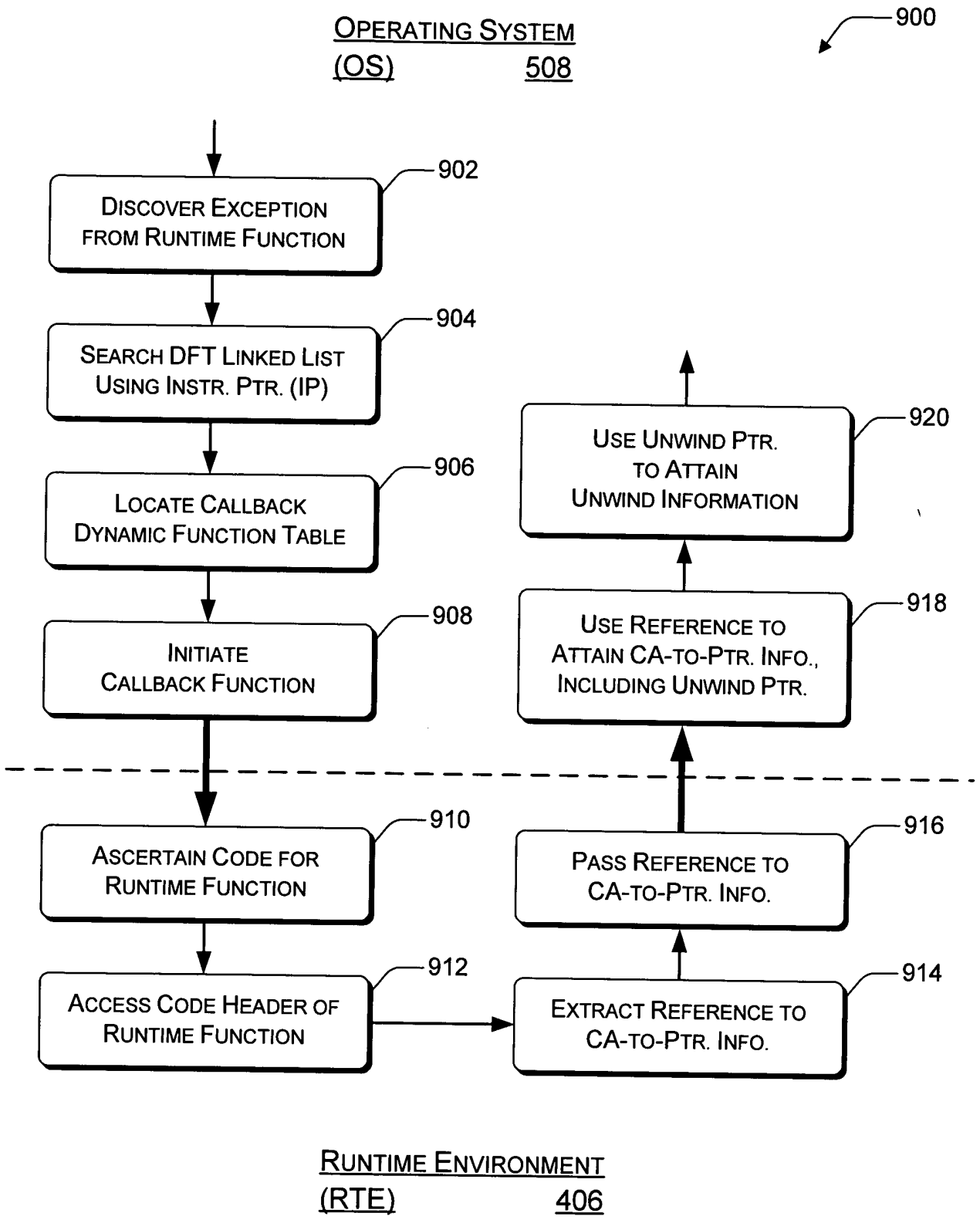
OPERATING SYSTEM (OS) 508
900
902
DISCOVER EXCEPTION FROM RUNTIME FUNCTION
904
SEARCH DFT LINKED LIST USING INSTR. PTR. (IP)
906
LOCATE CALLBACK DYNAMIC FUNCTION TABLE
908
INITIATE CALLBACK FUNCTION
910
ASCERTAIN CODE FOR RUNTIME FUNCTION
912
ACCESS CODE HEADER OF RUNTIME FUNCTION
914
EXTRACT REFERENCE TO CA-TO-PTR. INFO.
916
PASS REFERENCE TO CA-TO-PTR. INFO.
918
USE REFERENCE TO ATTAIN CA-TO-PTR. INFO., INCLUDING UNWIND PTR.
920
USE UNWIND PTR. TO ATTAIN UNWIND INFORMATION
RUNTIME ENVIRONMENT (RTE) 406

FIG. 9

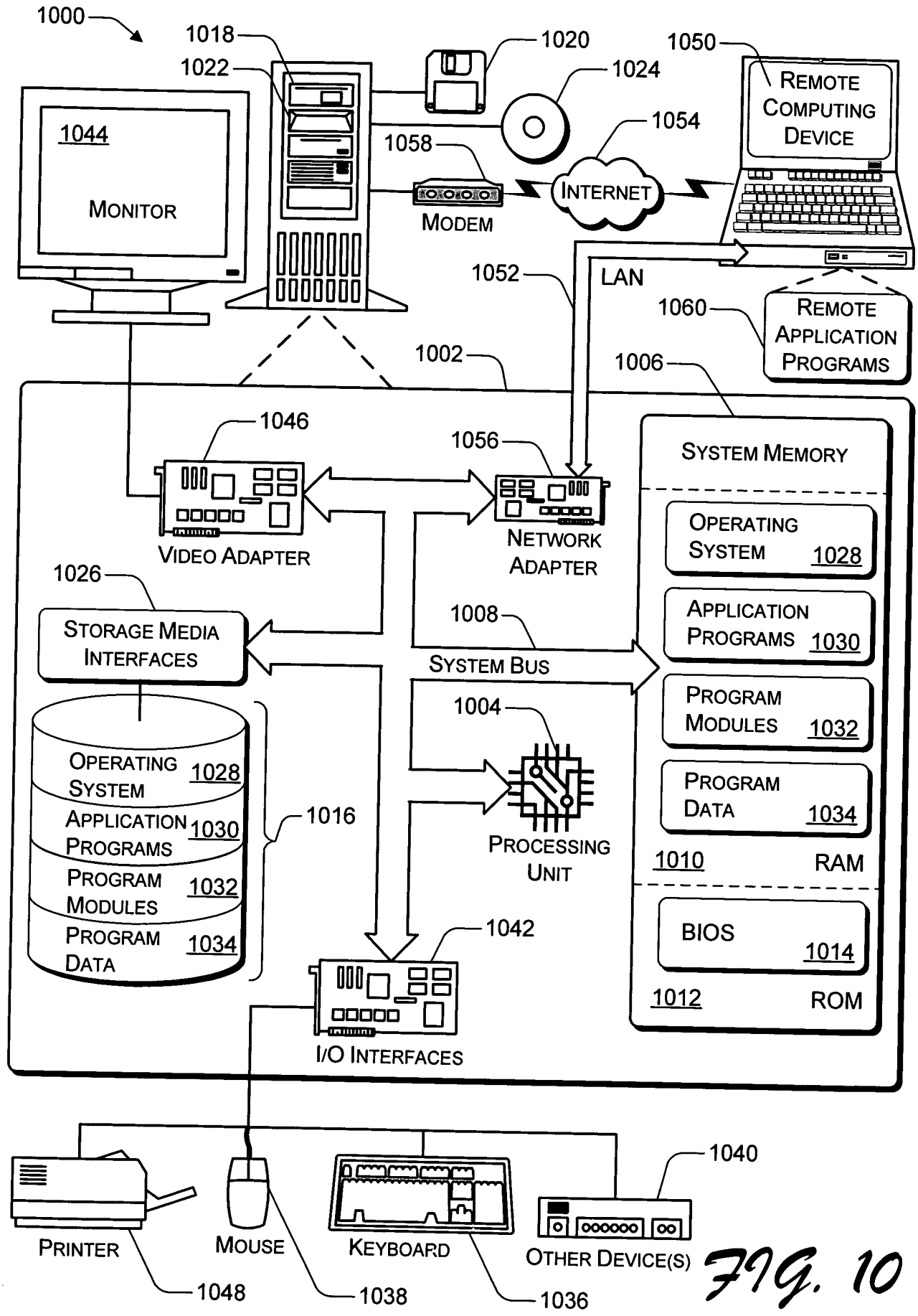
1000
1018
1022
1020
1024
1050
REMOTE COMPUTING DEVICE
1044
MONITOR
1058
MODEM
1054
INTERNET
1052
LAN
1060
REMOTE APPLICATION PROGRAMS
1002
1006
1046
1056
SYSTEM MEMORY
VIDEO ADAPTER
NETWORK ADAPTER
OPERATING SYSTEM 1028
1026
STORAGE MEDIA INTERFACES
1008
APPLICATION PROGRAMS 1030
SYSTEM BUS
1004
PROGRAM MODULES 1032
OPERATING SYSTEM 1028
APPLICATION PROGRAMS 1030
PROGRAM MODULES 1032
PROGRAM DATA 1034
1016
PROCESSING UNIT
PROGRAM DATA 1034
1010
RAM
BIOS 1014
1042
1012
ROM
I/O INTERFACES
1040
PRINTER
MOUSE
KEYBOARD
OTHER DEVICE(S)
1048
1038
1036

FIG. 10